EMERGING HORIZONS

in Retinal Genetics, Biology and Disease

THURSDAY • MARCH 16, 2023

NATIONAL EYE INSTITUTE
Neurobiology – Neurodegeneration & Repair Laboratory

	TIME	SPEAKER	SESSION CHAIR
	8:00 am - 8:15 am	*Virtual Check-in* *Coffee/Breakfast*	
	8:15 pm - 8:30 pm • *Welcome* – **Anand Swaroop** – Chief, N-NRL, NEI *Opening Remarks* – **Michael F Chiang** – Director, NEI		
SESSION 1	8:30 am - 9:30 am	**Constance L Cepko** – Harvard Medical School (*Introduction/host* – Florian Regent) How does the retina generate so much diversity?	**Douglas Forrest** NIDDK
	9:30 am - 9:45 am	**Soumitra Pal** – N-NRL, NEI Evolution of retinal cell-types and retinal adaptation for nocturnality	
	9:45 am - 10:15 am	**Sudeep Mehrotra** – Massachusetts Eye and Ear Infirmary (*Introduction/host* – Partha Dey) Isoform discovery in human retina	
Break	10:15 am - 10:45 am • *Coffee*		
SESSION 2	10:45 am - 11:45 am	**Ayellet V Segre** – Massachusetts Eye and Ear Infirmary (*Introduction/host* – Nivedita Singh) From genetic variation and single cell genomics to mechanisms underlying complex retinal disease	**Catherine A Cukras** NEI
	11:45 am - 12:00 pm	**Rinki Ratnapriya** – Baylor College of Medicine (*Introduction* – Kyle Schwab) Building machine learning models for investigating molecular basis of age-related macular degeneration	
	12:00 pm - 12:30 pm	**Jayshree Advani** – N-NRL, NEI Integration of human retinal DNA methylome with genetic variants and gene expression identifies regulatory epigenetic mechanisms in age-related macular degeneration	
		Jaya Krishnan – N-NRL, NEI Elucidating genotype-phenotype correlation in age-related macular degeneration – Refining its genetic etiology	
		Partha Dey – N-NRL, NEI Deletion of age-related macular degeneration-associated paired immunoglobin-like receptor B (PILRB) leads to photoreceptor dysfunction in the mouse retina	
		Q&A	
Break	12:30 pm - 1:30 pm • *Informal Discussion + lunch (for all in-person attendees)*		
SESSION 3	1:30 pm - 2:00 pm	**Ximena Corso Díaz** – N-NRL, NEI The photoreceptor-specific transcription factor NRL interacts with RNA-binding proteins and regulates R-loop levels	**Hyun Beom Song** NEI
		Xulong Liang – N-NRL, NEI The multifaceted modulation of the regulatory activity of bZIP transcription factor NRL	
		Kiam Preston – N-NRL, NEI Regulation of Gene Expression in Rod Photoreceptors by bZIP Transcription Factor NRL	
		Nivedita Singh – N-NRL, NEI Genome wide profiling of promoter-anchored interactions in the human trabecular meshwork cells	
		Q&A	
	2:00 pm - 3:00 pm	**Emily Y Chew** – NEI (*Introduction/host* – Mohita Gaur) The environmental and phenotypic risk factors on progression of AMD: Updates from AREDS/AREDS2	
	3:00 pm - 3:30 pm	**Tim Cherry** – University of Washington (*Introduction/host* – Xulong Liang) New Opportunities to Understand Hidden Genetic Variation in Retinal Disease	
Break	3:30 pm - 3:45 pm • *Coffee*		
SESSION 4	3:45 pm - 4:00 pm	**Jerome E Roger** – University of Paris-Saclay, France (*Introduction/host* – Wyndham Batchelor) Glycogen Synthase Kinase 3: a multi-tasking kinase for photoreceptor development and maintenance	**S Patricia Becerra** NEI
	4:00 pm - 5:00 pm	**Krzysztof Palczewski** – University of California Irvine (*Introduction/host* – Laura Campello) The future of pharmacology in the eye: Traditional pharmacology, Systems pharmacology, or Genome editing	
	6:00 pm - 10:00 pm • *Networking and Dinner*		

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	TIME	SPEAKER	SESSION CHAIR
	8:15 am - 8:30 am	*Virtual Check-in* *Coffee/Breakfast*	
SESSION 1	8:30 am - 9:30 am	**Claude Desplan** – New York University (*Introduction/host* – Kiam Preston) The generation and evolution of neural diversity	**Paul P Liu** NHGRI
	9:30 am - 10:00 am	**Grazyna Palczewska** – University of California Irvine (*Introduction/host* – Zepeng Qu) From mouse models to humans, two-photon imaging of the retinal in disease and therapy	
Break	10:00 am - 10:30 am • *Coffee*		
SESSION 2	10:30 am - 11:00 am	**Volker Busskamp** – University of Bonn, Germany (*Introduction/host* – Jaya Krishnan) Human stem cell models for vision research	**Tiansen Li** NEI
	11:00 am - 11:15 pm	**Holly Y Chen** – University of Alabama at Birmingham (*Introduction/host* – Carolina Beltrame Del Debbio) High-throughput screening in iPSC-derived retinal organoids identifies drug candidate reserpine and derivatives to maintain photoreceptor survival	
	11:15 pm - 12:00 pm	**Hyun Beom Song** – N-NRL, NEI Attenuation of photoreceptor degeneration in P23H rhodopsin transgenic rats by reserpine, previously discovered in a photoreceptor survival screen of CEP290 retinal ciliopathy	
		Florian Regent – N-NRL, NEI Modeling and gene therapy rescue of the retinal degeneration associated with Usher type 1C syndrome using patient-derived organoids	
		Kyle Schwab – N-NRL, NEI Improving Retinal Organoid Cultures Using 3D-Printed Bioreactors	
		Carolina Beltrame Del Debbio – N-NRL, NEI Molecular and regulatory networks during retinal organoid formation	
		Wyndham Batchelor – N-NRL, NEI Long Term Culture of Adherent Retinal Organoids on Microbial Transglutaminase Crosslinked Gelatin Hydrogel	
		Zepeng Qu – N-NRL, NEI Multi-level genome reorganization during human retinal organoid differentiation	
		Q&A	
Break	12:00pm - 1:00 pm • *Informal Discussion + lunch (for all in-person attendees)*		
SESSION 3	1:00 pm - 2:00 pm	**Jacque L Duncan** – University of California San Francisco (*Introduction/host* – Ximena Corso Diaz) Clinical trials for inherited retinal degenerations: where do we go from here?	**Robert N Fariss** NEI
	2:00 pm - 2:30 pm	**Anupam K Mondal** – N-NRL, NEI Diet- and sex-related responses in the aging retina identified by multi-omics approach	
		Laura Campello – N-NRL, NEI Transcriptional dysregulation during retinal aging at single-cell resolution	
		Mohita Gaur – N-NRL, NEI Histone Lactylation in the retina-linking metabolism to gene expression	
		Q&A	
SESSION 4	2:30 pm - 3:30 pm	**Donald J Zack** – Johns Hopkins Medicine (*Introduction/host* – Anupam K Mondal) Challenges and opportunities for the development of neuroprotective strategies for the treatment of glaucoma and the retinal degenerations	**Wei Li** NEI
Break	3:30 pm - 3:45 pm • *Coffee*		
	3:45 pm - 4:45 pm	**Joshua R Sanes** – Harvard University (*Introduction/host* – Jayshree Advani) Retinal injury, disease and evolution: a transcriptomic perspective	
	4:45 pm - 5:00 pm • *Closing remarks* – **David Schneeweis** – Scientific Director (acting) **Anand Swaroop** – Chief, N-NRL, NEI		

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RESEARCH IN VISION REPAIR AND HEALTH

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